

REMARKS

This is a full and timely response to the Office Action mailed October 4, 2004. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

Present Status of Patent Application

Upon entry of the amendments in this response, claims 1-8 and 11-28 remain pending in the present application. Claims 9-10 have been canceled without prejudice, waiver or disclaimer and claim 28 has been newly added. Applicants reserve the right to pursue the subject matter of the canceled claim in a continuing application, if Applicants so choose, and do not intend to dedicate the canceled subject matter to the public.

Reconsideration and allowance of the application and presently pending claims are respectfully requested.

A. Claim Rejections - 35 U.S.C. § 102

General statement of the rejection

Claims 1, 5-6, 8-9, 11-12, 14-17, 20-22, and 25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Killat (US Patent No. 4,442,550).

Response to the Rejection

Claim 1

Killat discloses “a device for recognizing a binary word.” Specifically, Killat’s claim1 includes a device comprising, in pertinent part, “a number of delay elements equal to the number of pulses plus the number of absences of pulses in the predetermined pulse pattern,” and further wherein “*the relative time delay of each delay element being equal to the time between the pulse or absence of pulse associated with the delay element and the last pulse or absence in the pulse pattern.*”

On the other hand, Applicants’ claim 1 pertains to “a method for performing time-domain equalization,” which Applicants have described in their Detailed description as: “(O)ptical systems of the present invention compensate for at least a portion of the impulse response impairments typically evident in optical circuits. This is achieved by incorporating one or more equalization systems that are adapted to equalize signals propagated via such optical circuits.” Applicants have amended claim 1 to further clarify the language of the

claim. Claim 1 is reproduced below with certain pertinent aspects emphasized to draw attention to the fact that at least these aspects are not disclosed or taught in the cited prior art.

1. A method for performing time-domain equalization, the method comprising:
receiving **an optical signal comprising a light pulse having an impulse response impairment**;
optically splitting the optical signal into a plurality of beams;
optically delaying at least one of the plurality of beams;
detecting the plurality of beams to generate respective electrical signal components; and
combining the respective electrical signal components to generate an **electrical output signal representing the light pulse after correction of the impulse response impairment**.
(Emphasis added)

As mentioned above, Applicants respectfully assert once again that the cited prior art, Killat, does not disclose or teach at least the emphasized aspects of claim 1 above, and consequently request withdrawal of the rejection of claim 1 under 35 U.S.C. 102(b).

Applicants further respectfully request allowance of claim 1.

Claims 5-6, 11-12, and 14-17

Claims 5-6, 11-12, and 14-17 depend directly or indirectly on independent claim 1. Since independent claim 1 is allowable over the prior references of record, then dependent claims 5-6, 11-12, and 14-17 are also allowable as a matter of law. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

Consequently, Applicants traverse the rejection of claims 5-6, 11-12, and 14-17 and request allowance of these claims.

Claim 8

Claim 8 includes, in pertinent part, “providing a first delay that is operative in part, to provide optical equalization of the light pulse.” Applicants respectfully assert that the cited prior art, Killat, does not disclose or teach at least this aspect of claim 8, and therefore request withdrawal of the rejection of claim 8 under 35 U.S.C. 102(b).

Applicants further respectfully request allowance of claim 8.

Claim 9

Claim 9 has been canceled without prejudice, waiver or disclaimer, thereby rendering moot the rejection of this claim.

Claim 20

Applicants have amended claim 20 to further clarify the language of the claim. Claim 20 is reproduced below with certain pertinent aspects emphasized to draw attention to the fact that at least these aspects are not disclosed or taught in the cited prior art.

20. A system for performing time-domain equalization, the system comprising:
means for receiving **an optical signal comprising a light pulse having an impulse response impairment**;
means for optically splitting the optical signal into a plurality of beams;
means for optically delaying at least one of the plurality of beams;
means for detecting the plurality of beams to generate respective electrical signal components; and
means for combining the respective electrical signal components to generate **an electrical output signal representing the light pulse after correction of the impulse response impairment**.
(Emphasis added)

As mentioned above, Applicants respectfully assert once again that the cited prior art, Killat, does not disclose or teach at least the emphasized aspects of claim 20 above, and consequently request withdrawal of the rejection of claim 20 under 35 U.S.C. 102(b).

Applicants further respectfully request allowance of claim 20.

Claims 21-22

Response to the rejection

Claims 21-22 depend directly or indirectly on independent claim 20. Since independent claim 20 is allowable over the prior references of record, then dependent claims 21-22 are also allowable as a matter of law. *In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988)

Consequently, Applicants traverse the rejection of claims 21-22 and request allowance of these claims.

Claim 25

Applicants have amended claim 25 to further clarify the language of the claim. Claim 25 is reproduced below with certain pertinent aspects emphasized to draw attention to the fact that at least these aspects are not disclosed or taught in the cited prior art.

25. A system for performing time-domain equalization, the system comprising:
a beamsplitter adapted to split **an optical signal comprising a light pulse having an impulse response impairment**, optically into beams;
a delay component optically communicating with the beamsplitter, the delay component being configured to receive at least one of the beams and delay the at least one of the beams optically;

an array of photodetectors arranged to receive the beams comprising the at least one of the beams, the array of photodetectors being adapted to generate respective electrical signal components; and

an amplifier arranged to receive the electrical signal components, the amplifier being adapted to generate **an electrical output signal representing the light pulse after correction of the impulse response impairment.**

(Emphasis added)

As mentioned above, Applicants respectfully assert once again that the cited prior art, Killat, does not disclose or teach at least the emphasized aspects of claim 25 above, and consequently request withdrawal of the rejection of claim 25 under 35 U.S.C. 102(b).

Applicants further respectfully request allowance of claim 25.

B. Claim Rejections - 35 U.S.C. § 102

General statement of the rejection

Claims 1, 2-4, 8-9, 11, 14, 18, 20, and 23-24 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Lewis (US Patent No. 5,555,119).

Response to the Rejection

Claim 1

Lewis discloses “a process for digital sampling of individual pulses.” Specifically, Lewis’s claim 18, which is a process claim, states, in pertinent part, “time-delaying at least parts of the modulated signal by a plurality of incremental time delays, to produce a plurality of modulated optical signals delayed in time with respect to one another and *each having a profile identical to at least part of that of the individual pulse...*”

On the other hand, Applicants’ claim 1 pertains to a “method for performing time-domain equalization.” Applicants have amended claim 1 to further clarify the language of the claim. Claim 1 is reproduced below with certain pertinent aspects emphasized to draw attention to the fact that at least these aspects are not disclosed or taught in the cited prior art.

1. A method for performing time-domain equalization, the method comprising:
receiving **an optical signal comprising a light pulse having an impulse response impairment;**
optically splitting the optical signal into a plurality of beams;
optically delaying at least one of the plurality of beams;
detecting the plurality of beams to generate respective electrical signal components; and
combining the respective electrical signal components to generate **an electrical output signal representing the light pulse after correction of the impulse response impairment.**
(Emphasis added)

Applicants respectfully assert that the cited prior art does not disclose or teach at least the emphasized aspects of claim 1 above, and therefore request withdrawal of the rejection of claim 1 under 35 U.S.C. 102(b).

Applicants further respectfully request allowance of claim 1.

Claims 2-4, 11, 14, and 18

Claims 2-4, 11, 14, and 18 depend directly or indirectly on independent claim 1. Since independent claim 1 is allowable over the prior references of record, then dependent claims 2-4, 11, 14, and 18 are also allowable as a matter of law. *In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988).

Consequently, Applicants traverse the rejection of claims 2-4, 11, 14, and 18 and request allowance of these claims.

Claim 8

Claim 8 includes, in pertinent part, “providing a first delay that is operative in part, to provide optical equalization of the light pulse.” Applicants respectfully assert that the cited prior art, Lewis, does not disclose or teach at least this aspect of claim 8, and therefore request withdrawal of the rejection of claim 8 under 35 U.S.C. 102(b).

Applicants further respectfully request allowance of claim 8.

Claim 9

Claim 9 has been canceled without prejudice, waiver or disclaimer, thereby rendering moot the rejection of this claim.

Claim 20

Applicants have amended claim 20 to further clarify the language of the claim. Claim 20 is reproduced below with certain pertinent aspects emphasized to draw attention to the fact that at least these aspects are not disclosed or taught in the cited prior art.

20. A system for performing time-domain equalization, the system comprising:
means for receiving **an optical signal comprising a light pulse having an impulse response impairment**;
means for optically splitting the optical signal into a plurality of beams;
means for optically delaying at least one of the plurality of beams;
means for detecting the plurality of beams to generate respective electrical signal components; and
means for combining the respective electrical signal components to generate **an electrical output signal representing the light pulse after correction of the impulse response impairment**.
(Emphasis added)

Applicants respectfully assert that the cited prior art, Lewis, does not disclose or teach at least the emphasized aspects of claim 20 above, and therefore request withdrawal of the rejection of claim 20 under 35 U.S.C. 102(b).

Applicants further respectfully request allowance of claim 20.

Claims 23-24

Response to the rejection

Claims 23-24 depend directly or indirectly on independent claim 20. Since independent claim 20 is allowable over the prior references of record, then dependent claims 23-24 are also allowable as a matter of law. *In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988)

Consequently, Applicants traverse the rejection of claims 23-24 and request allowance of these claims.

C. Claim Rejections - 35 U.S.C. § 102

General statement of the rejection

Claims 1, 2, 5, 8, 10 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Wickham *et al.* (U.S. Patent No. 6,708,003).

Response to the Rejection

Claim 1

Wickham discloses an optical transmission system utilizing “precise phase and amplitude control.” Specifically, Wickham’s claim1 includes a system comprising, in pertinent part, “a plurality of delay lines,” together with “means for producing a plurality of control signals, utilizing orthogonal code modulation, *to control the modulation of an optical wave component of each said delay line signal...*”

On the other hand, Applicants’ claim 1 pertains to a “method for performing time-domain equalization.” Applicants have amended claim 1 to further clarify the language of the claim. Claim 1 is reproduced below with certain pertinent aspects emphasized to draw attention to the fact that at least these aspects are not disclosed or taught in the cited prior art.

1. A method for performing time-domain equalization, the method comprising:
receiving **an optical signal comprising a light pulse having an impulse response impairment**;
optically splitting the optical signal into a plurality of beams;
optically delaying at least one of the plurality of beams;
detecting the plurality of beams to generate respective electrical signal components; and

combining the respective electrical signal components to generate an **electrical output signal representing the light pulse after correction of the impulse response impairment**.
(Emphasis added)

Applicants respectfully assert that the cited prior art, Wickham, does not disclose or teach at least the emphasized aspects of claim 1 above, and therefore request withdrawal of the rejection of claim 1 under 35 U.S.C. 102(b).

Applicants further respectfully request allowance of claim 1.

Claim 8

Claim 8 includes, in pertinent part, “providing a first delay that is operative in part, to provide optical equalization of the light pulse.” Applicants respectfully assert that the cited prior art, Wickham, does not disclose or teach at least this aspect of claim 8, and therefore request withdrawal of the rejection of claim 8 under 35 U.S.C. 102(b).

Applicants further respectfully request allowance of claim 8.

Claims 2, 5, 10 and 13

Claims 2, 5, 10, and 13 depend directly or indirectly on independent claim 1. Since independent claim 1 is allowable over the prior references of record, then dependent claims 2, 5, 10, and 13 are also allowable as a matter of law. *In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988).

Consequently, Applicants traverse the rejection of claims 2, 5, 10, and 13 and request allowance of these claims.

D. Claim Rejections - 35 U.S.C. § 103

Claim 7

Statement of the rejection

Claim 7 has been rejected under 35 U.S.C 103(a) as being unpatentable over Lewis in view of Killat.

Response to the rejection

Applicant respectfully asserts that the rejection of claim 7 is improper because it does not conform to MPEP guidelines for a rejection under 35 U.S.C. 103(a).

To quote MPEP 706.2(j) *Contents of a 35 U.S.C. 103 Rejection*, in pertinent part:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when

combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria. (Emphasis added)

Applicants' claim 7 is directed towards a method for performing time-domain equalization, while Lewis discloses a process for digital sampling of individual pulses. Consequently, Applicants respectfully assert that there is no suggestion or motivation, either in cited reference of Lewis or in the knowledge generally available to one of ordinary skill in the art, to modify Lewis or to combine Lewis with Killat. Furthermore, claim 7 depends on claim 1 and therefore incorporates all the limitations of independent claim 1. Claim 1 defines, in pertinent part, an optical signal comprising a light pulse having an impulse response impairment and a method to correct such an impairment using time-domain equalization. The cited prior art reference combination of Lewis and Killat do not individually, or in combination, teach or suggest at least this feature of Applicants' claim 1.

Consequently, Applicants respectfully assert that the Office action fails to establish a *prima facie* case of obviousness in rejecting claim 7 under 35 U.S.C. 103(a). Withdrawal of the rejection, followed by allowance of claim 7 is hereby requested.

E. Claim Rejections - 35 U.S.C. § 103

Claims 25 -27

Statement of the rejection

Claims 25-27 have been rejected under 35 U.S.C 103(a) as being unpatentable over Lewis.

Claim 25

Response to the rejection

Applicant respectfully asserts that the rejection of claim 25 is improper because it fails to establish a *prima facie* case of obviousness as required by MPEP guidelines for a rejection under 35 U.S.C. 103(a). Specifically, the Office action fails to point out where in Lewis can be found a suggestion or motivation for carrying out time-domain equalization of an optical signal. Additionally, Applicants have currently amended claim 25 to clarify the nature of the optical signal as “comprising a light pulse having an impulse response impairment.” Lewis does not teach or disclose at least this limitation of Applicants’ claim 25.

Consequently, Applicants respectfully assert that the Office action fails to establish a *prima facie* case of obviousness in rejecting claim 25 under 35 U.S.C. 103(a). Withdrawal of the rejection, followed by allowance of claim 25 is hereby requested.

Claims 26-27

Response to the rejection

Claims 26-27 depend directly on independent claim 25. Since independent claim 25 is allowable over the prior references of record, then dependent claims 26-27 are also allowable as a matter of law. *In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988)

Consequently, Applicants traverse the rejection of claims 26-27 and request allowance of these claims.

F. Claim Rejections - 35 U.S.C. § 103

Claim 19

Statement of the rejection

Claim 19 has been rejected under 35 U.S.C 103(a) as being unpatentable over Killat in view of Ogura.

Claim 19

Response to the rejection

Applicant respectfully asserts that the rejection of claim 19 is improper because it fails to establish a *prima facie* case of obviousness as required by MPEP guidelines for a rejection under 35 U.S.C. 103(a). Specifically, the Office action fails to point out where in Killat can be found a suggestion or motivation for carrying out time-domain equalization of an optical signal. Additionally, Applicants have currently amended claim 1, which is the independent claim from which claim 19 is dependent, to clarify the nature of the optical signal as “comprising a light

pulse having an impulse response impairment.” Killat does not teach or disclose at least this limitation of Applicants’ claim 1.

Consequently, Applicants respectfully assert that the Office action fails to establish a *prima facie* case of obviousness in rejecting claim 19 under 35 U.S.C. 103(a). Withdrawal of the rejection, followed by allowance of claim 19 is hereby requested.

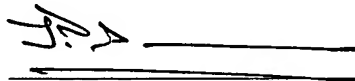
Prior Art Made of Record

The prior art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.

CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicants respectfully submit that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that claims 1-8 and 11-28 are in condition for allowance. Although some dependent claim rejections and some obviousness rejections are explicitly addressed above, the omission of arguments for other claims is not intended to be construed as an implied admission that the Applicant agrees with the rejection or finding of obviousness for the respective claim or claims. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned representative at (770) 933-9500.

Respectfully submitted,



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Evelyn Sanders
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